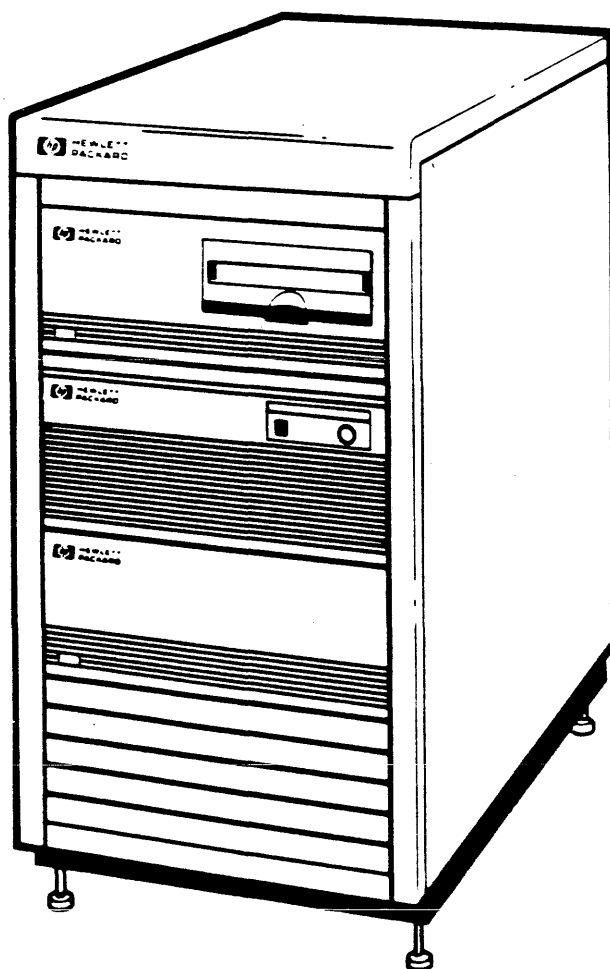


HP 3000 Series 37



Customer Installation Guide



HP 3000 Series 37

Customer Installation Guide



8010 Foothills Blvd., Roseville, CA

Part No. 30457-90001
E0984

Printed in U.S.A. 09/84

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PRINTING HISTORY

New editions are complete revisions of the manual. Update packages, which are issued between editions, contain additional and replacement pages to be merged into the manual by the customer. The dates on the title page change only when a new edition or a new update is published. No information is incorporated into a reprinting unless it appears as a prior update; the edition does not change when an update is incorporated.

First Edition..... Sep 1984.....

LIST OF EFFECTIVE PAGES

The List of Effective Pages gives the date of the most recent version of each page in the manual. To verify that your manual contains the most current information, check the dates printed at the bottom of each page with those listed below. The date on the bottom of each page reflects the edition or subsequent update in which that page was printed.

Effective Pages

Date

all..... Sep 1984

PREFACE

This manual contains the information that you need to install your computer hardware. Once you have correctly installed your computer, use the Series 37 Software Installation manual (P/N 30457-90012) to install your software.

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GENERAL INFORMATION

SECTION

1

1.0 INTRODUCTION

This manual introduces you to your HP 3000 Series 37 computer system and explains how to prepare for and install your computer. The customer-installable system can include the following:

- *HP 32449A System Processor Unit
(pre-installed in the cabinet)

- *HP 7945A Disc Drive (55 Mb)

- *HP 9144A Cartridge Tape Unit (67 Mb)

- HP 2392A Terminal

- HP 2623A Terminal

- HP 2624B Terminal

- HP 2625 Terminal

- HP 2628A Terminal

- HP 2601/2 Printer (20-25 CPS)

- HP 2932A Printer (200 CPS)

- HP 2933/4A Printer (100/200 CPS)

- HP 7475A Plotter (6-pen)

- HP 150 Personal Office Computer

*These devices, plus one terminal to act as the system console, compose the minimum system.

This manual can be used by the first-time computer user. You need no special knowledge of computers or electronics to install the system. The only tool required is a flat-blade screwdriver.

Section 2 provides the information that you need to verify that your office environment will support your computer system. Most offices require no modification. However, read Section 2 so that you are aware of any potential problems and can remedy them prior to installation.

Section 3 guides you through the installation procedure.

Appendix A contains the technical information that your electrician may need.

The list of Sales & Support Offices is in alphabetical order by country. If you decide to add a device that is not included in this manual, consult with your CE.

Follow the guidelines in this manual to help ensure that your system operates properly. For continued long-term service, we recommend that you contact your Sales Representative for an HP service contract.

1.1 SYSTEM DESCRIPTION

Your computer system is made up of a group of devices that communicate with each other in order to perform tasks for you. When you install your system, you provide the communication links when you plug in the HP-IB and RS-232 cables. See Figure 1-1.

The heart of your system is the System Processor Unit (SPU). The standard SPU contains four boards:

1. Central Processor Unit (CPU - located in slot 5) - capable of processing 200,000 machine instructions per second (0.2 MIPS). The CPU also performs a comprehensive, built-in system self-test, verifies system problems, and performs routine testing on system hardware. The CPU is designed to be software compatible with all HP 3000 computers, enabling you to expand your system as your needs grow.
2. Peripheral Interface Controller (PIC - located in slot 4) - a high-speed interface that utilizes the HP Interface Bus (HP-IB). The PIC communicates with the tape, disc units, and system printers.
3. Memory (located in slot 2) - stores up to 512,000 bytes (512 kb) of information on a single board. This board can be replaced by a 2,048,000 byte (2048 kb) board.
4. Advanced Terminal Processor for the Series 37 (ATP37 - located in slot 1) - RS-232 serial interface. The ATP37 provides one port to communicate with the modem and six ports to communicate with terminals, plotters, and printers.

Slot 3 is an optional slot provided for either a second ATP37 board (that gives you the capability to connect seven additional terminals and/or printers and/or plotters) or a second memory board (that increases your storage capacity to 1024 kb).

The Tape Unit provides system backup and transportability of data. The system program is arranged so that it initially loads from the tape when you power the system up.

The Disc Drive is a random access memory device that is capable of storing information. The system program and your application reside on the disc.

The console is a terminal that is plugged into Port 0. It is primarily used to provide system control (system start, backup, and stop) in addition to performing the functions of a terminal.

A terminal allows you to communicate with the system, enabling you to perform a variety of tasks efficiently.

A plotter provides a variety of graphics capabilities.

A printer provides high-quality printing at a speed that meets the needs of a small business system.

All of your system's devices perform built-in self-tests. The successful completion of the self-tests indicates that your system hardware is performing correctly even before you begin your work.

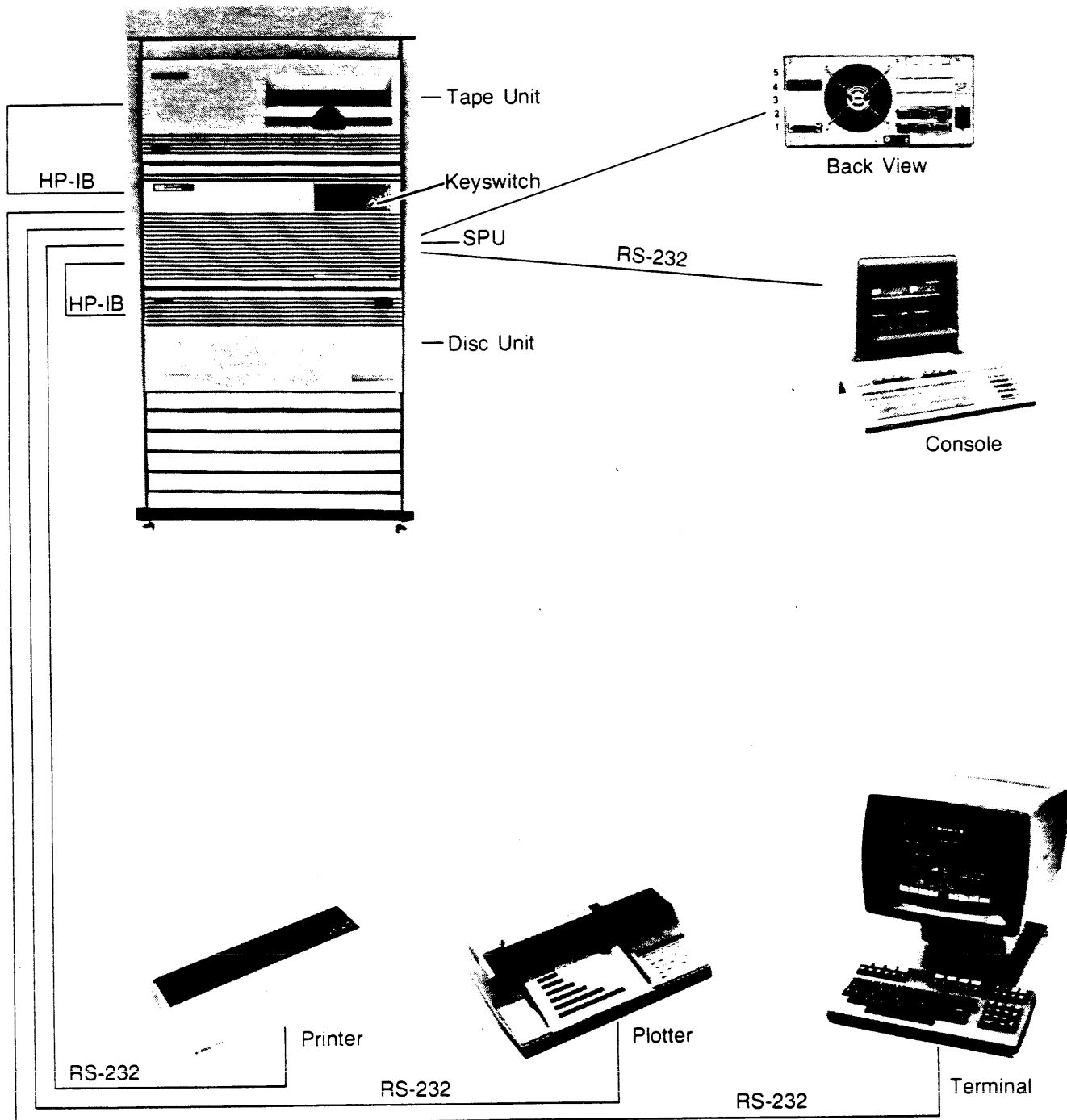


Figure 1-1 The IIP 3000 Series 37 Computer System

PREPARING FOR YOUR SYSTEM

SECTION

2

2.0 INTRODUCTION

This section provides the information that you need to prepare for the installation of your computer system. This information will help you decide where to put your system, what to have ready when your system arrives, and how to receive your system.

The normal office requires no alteration. However, we recommend that you read this section thoroughly in order to verify that your office environment is indeed normal.

This section includes:

- * "Principal Operator" - describes the role of a principal operator and the support that person has.
- * "Space and Environment Planning" - provides the system dimensions, environmental and electrical requirements, and defines possible sources of interference or contamination.
- * "Additional Requirements" - describes additional items necessary to computer operation, such as media storage, computer supplies, and telephone access.

Although you are responsible for providing a suitable environment for your computer system, no extensive preparation should be required. If your office is unusual, Hewlett-Packard or your third party supplier may recommend that you purchase HP's Site Planning Service.

2.1 PRIOR TO INSTALLATION: A CHECKLIST

The items in this list are expanded upon in the text that follows the list.

1. Select a Principal Operator to be responsible for the preparation, installation and operation of your computer system.
2. Select a location for your system. Plan the physical arrangement of your system and furniture.
3. Call your building maintenance people to verify that your electrical wiring is connected to approved ground and that it provides adequate current to supply power to all of your electrical equipment.
4. Check the average temperature and humidity of your environment. Install climate conditioning equipment if necessary.
5. Order consumable supplies, including printer paper and ribbon, and plotter paper and pens (available from Hewlett-Packard). Set up a storage area.
6. When you receive your system, inspect the cartons for any damage. If there is evidence of damage, request that the carrier's representative be present when that carton is unpacked.

2.2 PRINCIPAL OPERATOR

Select someone to be the Principal Operator. This person is responsible for monitoring the installation, operation, and maintenance of your system. Initially, the Principal Operator will order computer supplies, and schedule training for system users. The Principal Operator should become familiar with the system and be ready to start its operation when the system is installed. The best way to acquire this knowledge is to take the HP 3000 System Manager Course.

HP People Who Can Help

Below is a list of Hewlett-Packard service personnel. Each member of the HP team is well trained and dedicated to helping you make maximum use of your computer system.

Sales Representative - your primary contact. Your sales representative coordinates HP resources to ensure on-time delivery of your system. Call your sales representative to arrange staff training or to acquire additional system devices.

Customer Engineer (CE) - the expert in computer and peripheral equipment service. The CE has the tools, parts, and skills to maintain your computer system. If you purchase an HP Maintenance Agreement, the CE will provide hardware maintenance, repair, and problem diagnosis.

Systems Engineer (SE) - the technical specialist in subsystems and programming languages. Your SE offers training and technical consulting on the programming language, utility programs, data base management, and system performance. The SE will provide software consulting and software problem diagnosis. Your sales person can describe the various software support services available to you.

Third Party People Who Can Help

Original Equipment Manufacturer (OEM) or System House -- If you have purchased an HP computer system and/or applications software from a third party, that party will provide consultation services on system operation and applications software (programs). In this situation, a maintenance agreement for hardware and software support is available from Hewlett-Packard.

2.3 SPACE AND ENVIRONMENT PLANNING

The location that you select for your system should satisfy both immediate and future needs. Select a location that enables you to add more equipment as your needs expand and ensures that you have sufficient room to operate, ventilate, and service your equipment. If you expand beyond a minimum system, the expansion requires CE site preparation and installation. If you are definitely planning to expand, it may be less expensive to have the CE do the site preparation now.

Remember that the length of the cables may restrict future moves. Plan to keep cables away from traffic paths. Hewlett-Packard supports the RS-232 cables up to 15 meters (50 feet) in length.

The cabinet that houses the SPU, disc drive, and tape unit is designed to sit on the floor. It is 720 mm (33 inches) high, 375 mm (15 inches) wide, and 711 mm (32 1/2 inches) deep. You should NOT plan to set anything on top of your cabinet. One meter (3 feet) of free space around the cabinet is suggested for ventilation during operation. If you plan to store the cabinet in a smaller space when it is not in use, provide a long enough cable to roll it into an open area for operation and servicing. Do NOT keep the key in the keyswitch.

CAUTION

To move the cabinet, raise the legs by turning them counterclockwise. Because the cabinet is front-heavy, it can tip when you are moving it. Push it from the front. Keep the legs down when you are not moving the cabinet.

CAUTION

Do not move the cabinet while the disc drive is on. Disc damage may result.

The remaining devices in your system are designed to sit on desk or table tops. The amount of space that you need is determined by the number of terminals, printers, and plotters that you have.

Environmental Considerations

Temperature and Humidity

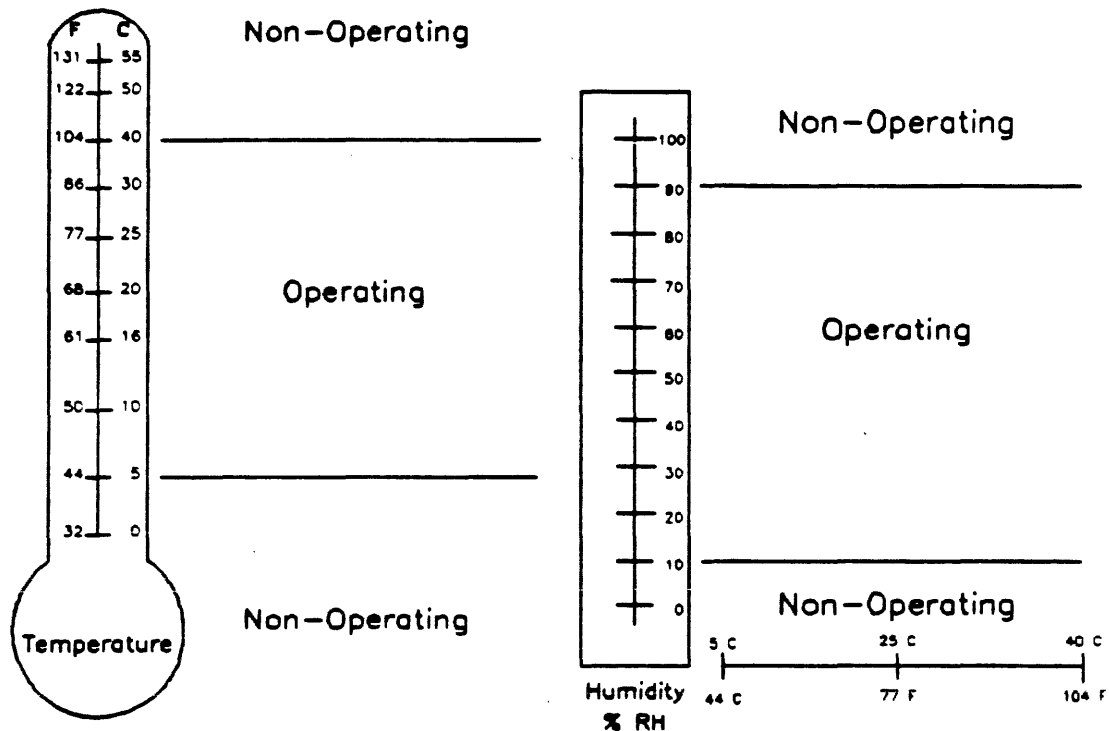


Figure 2-1. Temperature and Humidity Requirements

Higher operating temperatures increase the failure rate of electronic circuitry. High humidity can cause device malfunctions or improper feeding of printer or plotter paper, while low humidity aggravates problems with static electricity. See Figure 2-1.

Your system has a high resistance to static electricity. However, if you have an abnormally high level of static electricity (25 kV or more - at this level, people will probably be "sparking" on contact), you may want to use a humidifier or place a grounded floor mat in front of your system. Excessive amounts of static electricity can cause system failures.

Your computer is air-cooled. Fans circulate air through the system and discharge warmer air into the room. The cabinet should have 1 meter (3 feet) of free space around it to allow warm air to dissipate properly. Place terminals on a hard surface, NOT on a typewriter pad, so that air can circulate below the terminal.

If you intend to use your system on weekends, be aware that the temperature and humidity in your building may vary from the normal workday conditions. In extreme environments, auxiliary air conditioning or heating might be required to prevent damage to the equipment. If you feel that it's necessary, use a thermometer and humidity gauge to monitor your site.

2.4 ELECTRICAL REQUIREMENTS

Your computer system has specific electrical requirements. You need to check with your building maintenance people to verify that:

- your electrical circuitry is grounded to code
- your wall outlets accommodate three-pronged plugs (thus providing safety ground)
- your circuitry provides 15 amperes of current in ADDITION to the amount necessary for other electrical equipment that you have on the same circuit

If you do not meet the above requirements, you need the assistance of an electrician. The information that your electrician needs is in Appendix A. If you add a device to your system that is not covered in this manual, consult with your HP Customer Engineer about additional electrical requirements (refer to the list of Sales & Support Offices at the end of this manual).

2.5 SOURCES OF ELECTRICAL INTERFERENCE

Heavy equipment (e.g. vacuum cleaners, floor buffers, and copiers) must not be plugged into the same circuit as the computer system while the system is on. Voltage surges created by heavy equipment can cause system errors.

Appliances that draw a lot of current (for example, heaters, hot plates, and coffee makers) should also be plugged into a separate circuit.

Lightning

In some geographical areas, it is advisable to install lightning protection for personnel and the computer. The National Electrical Code, Article 280, describes the installation of lightning arrestors on power and communication lines in the United States.

Radiated Interference

Radiated interference causes a variety of computer problems, most commonly disc read/write errors. Common sources of radiation are nearby:

- airport communications and radar
- two-way radio transmitters
- television transmitters
- radio transmitters
- microwave transmitters

Hand-held transceivers (e.g. "walkie-talkies") produce the same effect as radio stations when used near computer equipment and should be prohibited from the areas in which computer equipment is operated.

Although your system is designed to withstand high levels of radiated interference, you may want to contact a local CE if you suspect a potential problem.

2.6 CONTAMINANTS

Fundamental safety precautions should be taken to minimize potential sources of damage. Do not install the system where there is a fire hazard from liquids, flammable gasses, or excessive dust.

Foreign particles may scratch the coating on the tape drive head, causing premature disc wear and/or data errors. The most common contaminants are dust, smoke, ashes, eraser crumbs, salty air, and food. Solvent vapors, such as those from liquid spirit duplicating equipment, wet process copiers, and volatile liquids, can soften disc coatings over a period of time. To prevent excessive wear, avoid getting these contaminants on your system.

2.7 PROVIDING OTHER NECESSITIES

Your sales representative can help you order your computer supplies. Necessary items include printer ribbon and paper and plotter paper and pens. These items are available from Hewlett-Packard.

Media Storage

We recommend that you provide a storage cabinet for tapes. Magnetic media have the same requirements as the computer for avoiding extremes of temperature and humidity. To maintain data integrity, do not place recorded media near magnetic fields (around motors, alternators, transformers, or disc drives).

Protection of Valuable Records

Your investment in equipment and data deserves protection. Protect your business records, magnetic media, and other information that is expensive or difficult to duplicate. Backup records should be maintained. Copies of vital data should be stored away from the computer area in fireproof storage.

Because you are making a large investment, you may want to look into obtaining electronic data processing insurance.

Telephone

It is a good idea to place a telephone with a long cord near your system, so that you may easily consult with an HP Customer Engineer or System Engineer.

Install an additional telephone to be used with a modem if the far-end of the communication link is to be manually answered. FCC regulations require that you notify the telephone company before you install a modem.

2.8 UNPACKING

Each carton should have unpacking instructions attached to it.

If any cartons that your system shipped in appear to be damaged, request that the carrier's representative witness the unpacking. If the system has been damaged, contact your Sales Representative for assistance.

3.0 INTRODUCTION

This chapter contains the instructions for installing your system. **READ** this entire chapter before you begin the installation.

NOTE

The installation procedure will refer you to other manuals. Each manual is shipped in the carton with its associated device.

Install the devices in the order specified in this chapter.

Unpack each device as you are ready to install it. There are unpacking instructions with each carton. Be sure to inventory the cartons to verify that the items that you ordered are the ones that you received.

NOTE

If there are discrepancies between the items that you ordered and the items that you received, call your Sales Representative. Do **NOT** perform the installation until the discrepancies have been corrected.

NOTE

If you order and receive an HP 3000 I/O Extender (HP 30458A), it **MUST** be installed by HP personnel.

SAVE the documentation and the packing lists. Label each cable before you set it down, so that you know which device to connect it to later.

It is a good idea to monitor your installation progress by treating the following installation procedure as a check list. This manual is yours - feel free to use the open spaces for your notes.

3.1 INSTALLATION PROCEDURE

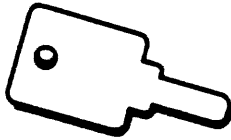
1. Unpack the HP32449A cabinet. The carton will contain the following:

- Cabinet - with the SPU pre-installed
- Manual(s)
- Power Cord*
- Miscellaneous Parts Kit
- Filler Panels
- Module Locks

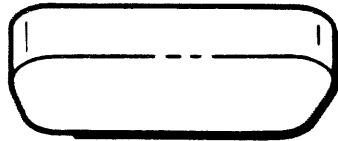
*All non-120V systems will be shipped with additional power cords.

Remove the following from the Miscellaneous Parts Kit:

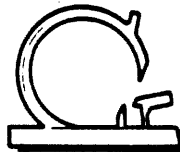
- SPU Key - keep it in a designated location



- Dust Cover - used in Step 12



- Cable Clamp - used in Step 13



- Tie Wraps - used in Steps 12 and 14

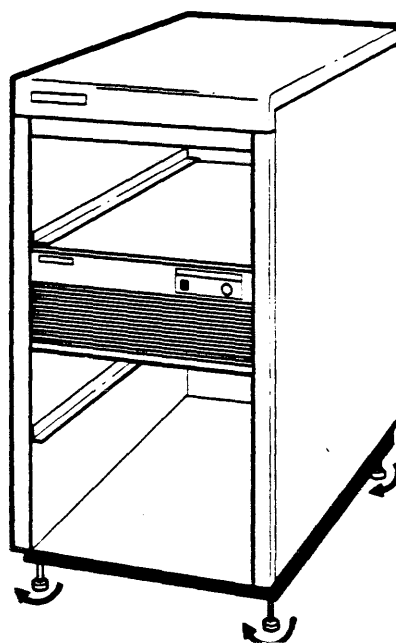


Leave the rest of the kit intact and store it in a designated location so that it will be available to a CE if a service call is ever necessary.

2. Carefully place the cabinet in the planned location. To make the cabinet stable, manually lower the four legs to the floor by turning them clockwise.

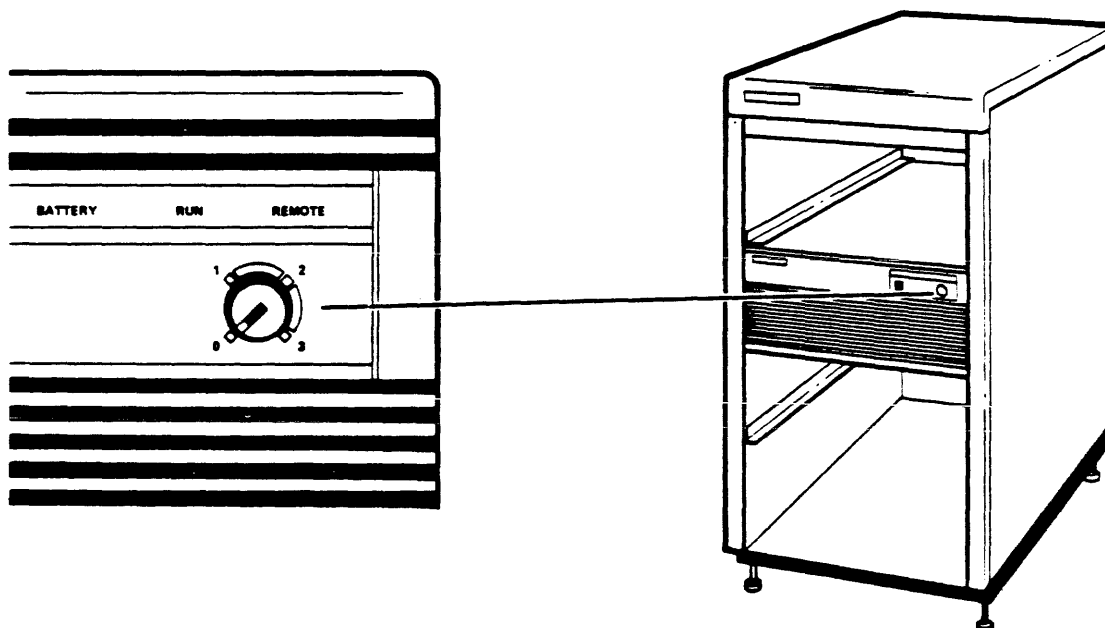
CAUTION

The cabinet is front-heavy. Because the legs are raised while you are moving it, it can tip. Do NOT sit on the cabinet and do NOT push it from the rear or sides. Push it from the front. Keep the legs down when you are not moving it.



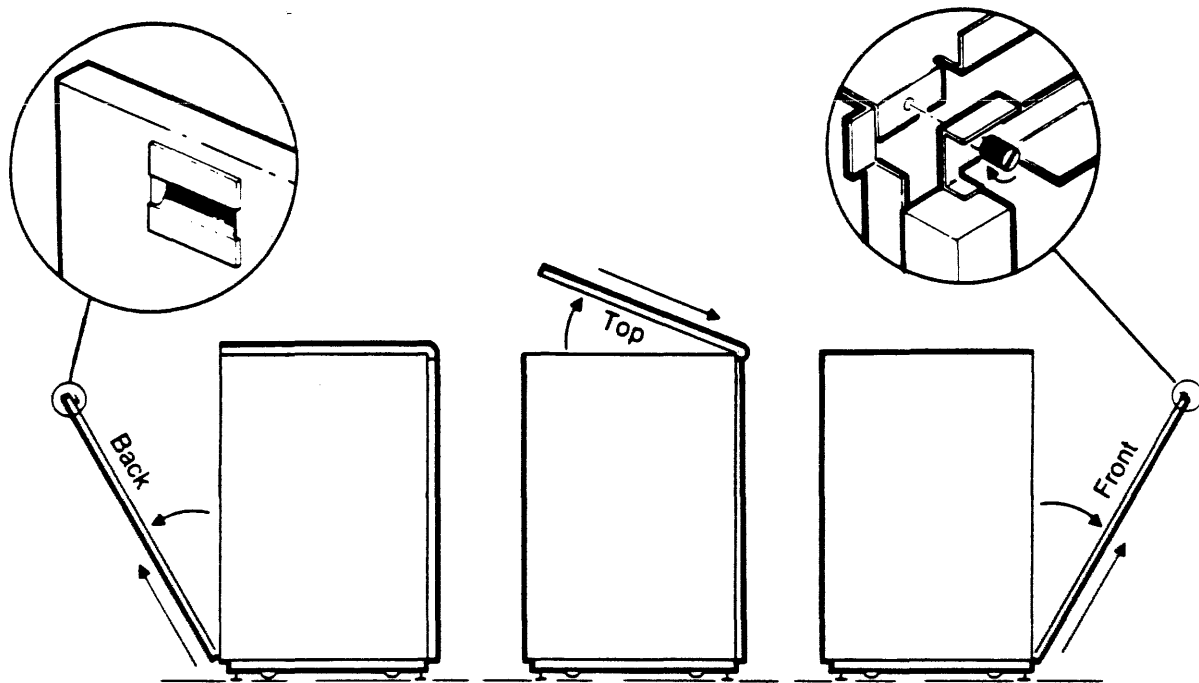
Front

3. Use the key to turn the SPU keyswitch to the OFF (0) position. Do NOT leave the key in the keyswitch.



Installation

4. Manually unsnap and remove the back, top, and front panels of the cabinet as illustrated.

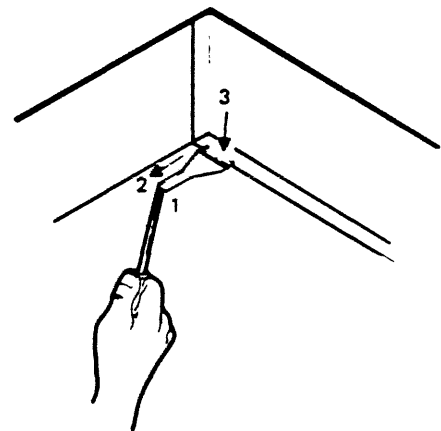


5. Unpack the HP7945A disc drive. The carton will contain the following:

- Disc Drive
- Manual(s)
- Power Cord
- HP-IB Cable

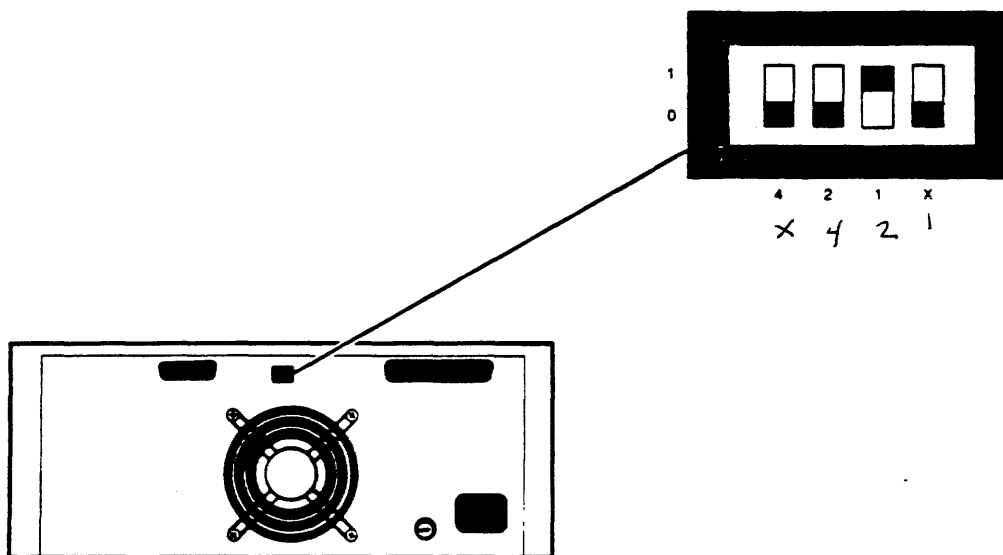
- (a) CAREFULLY place the disc on its side and remove the two mounting feet from the bottom of the disc drive by:

- lifting the back of the mounting foot with the screwdriver (1),
- sliding the mounting foot back (2), and
- lifting the mounting foot out (3).

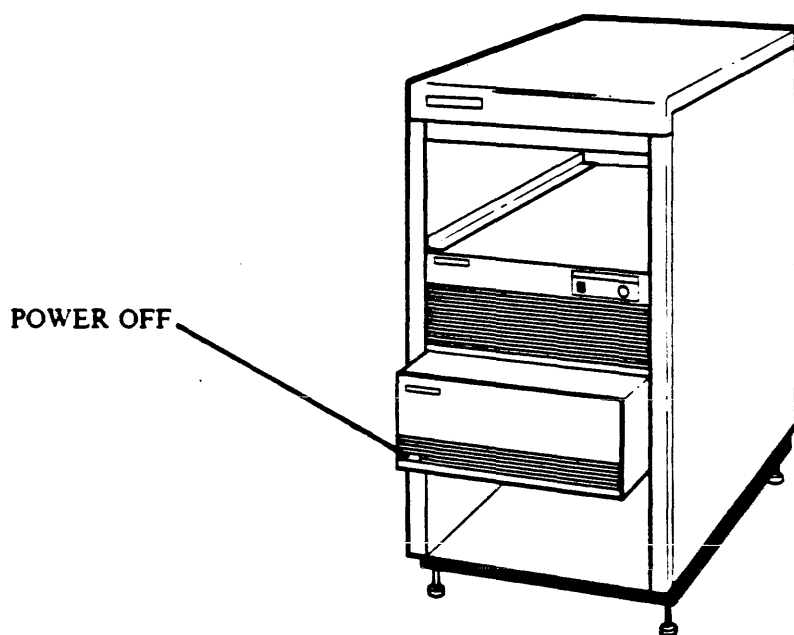


Note: Do not be concerned if a mounting foot breaks - you do not need them.

- (b) Set the HP-IB switches to 1 by using a pen to slide switch 1 to the 1 position.

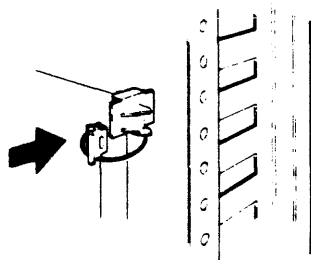


- (c) Slide the disc drive onto the third set of rails. Do NOT slide the disc drive completely into the cabinet.

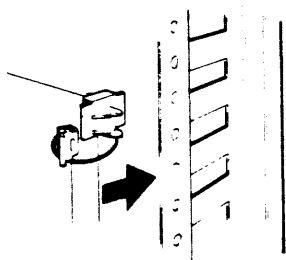


Installation

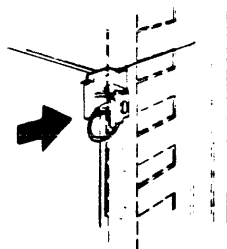
- (d) Attach a module lock to each side of the disc drive and to the frame in the following manner (look at the module locks on the SPU if you need a physical example):



- Place a module lock in the groove on both top corners of the disc drive.



- Slide the disc drive into the frame so that the module lock touches the frame.

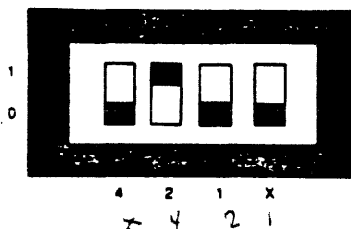


- Slide each clip into the lock as shown.

Verify that the module locks are properly installed by trying to slide the disc drive in or out of the cabinet.

NOTE

If you have a second disc drive, set the HP-IB address switches on that disc to 2, slide the disc into the bottom space in the cabinet, and attach the module locks.

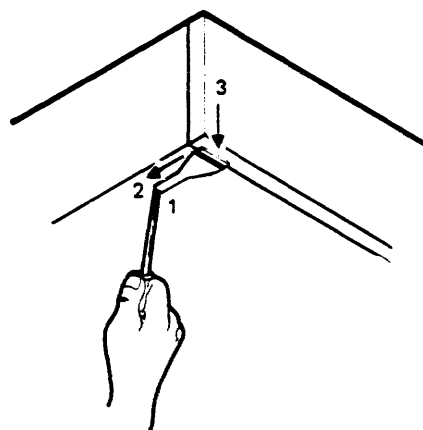


6. Unpack the HP9144A tape unit. The carton will contain the following:

- Tape Unit
- Manual(s)
- Power Cord
- HP-IB Cable

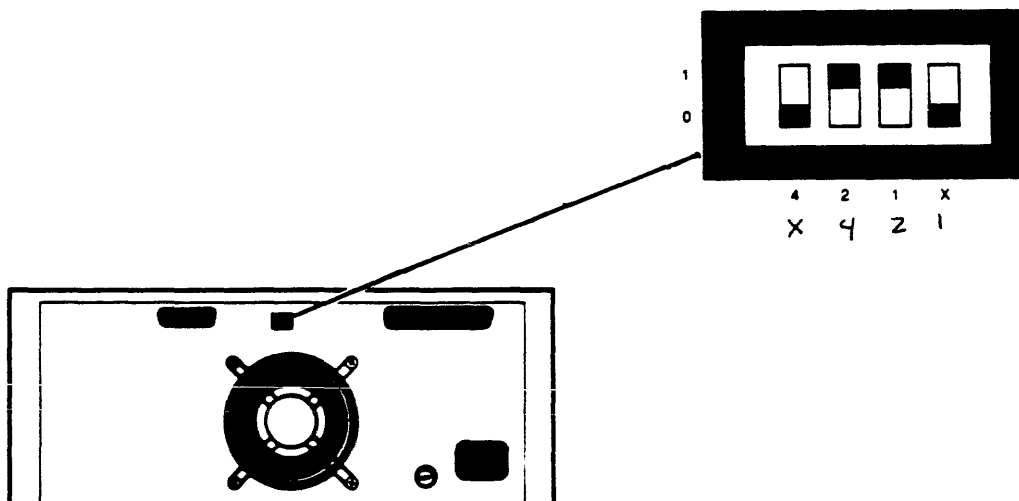
(a) **CAREFULLY** place the tape unit on its side and remove the two mounting feet from the bottom of the tape by:

- lifting the back of the mounting foot with the screwdriver (1),
- sliding the mounting foot back (2), and
- lifting the mounting foot out (3).



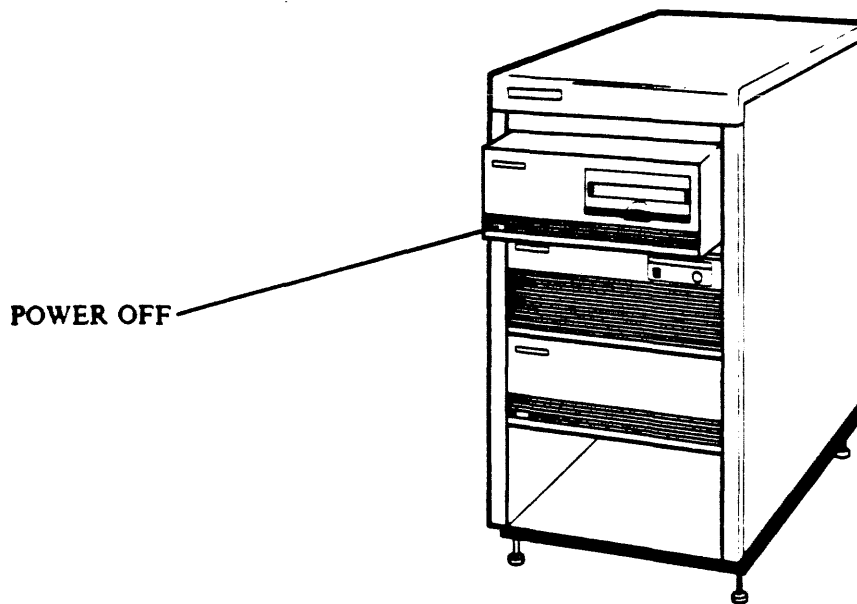
Note: Do not be concerned if a mounting foot breaks - you do not need them.

(b) Set the HP-IB address switches to 3 by using a pen to set switches 1 and 2 to the 1 position.

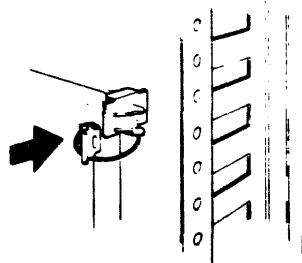


Installation

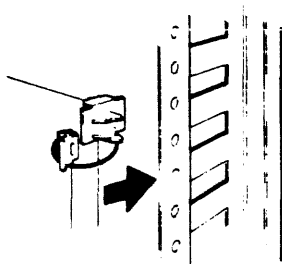
- (c) Slide the tape unit onto the first set of rails. Do NOT slide the tape unit completely into the cabinet.



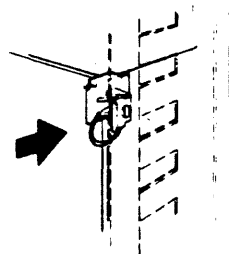
- (d) Attach a module lock to each side of the tape unit and to the frame in the following manner:



- Place a module lock in the groove on both top corners of the tape unit.



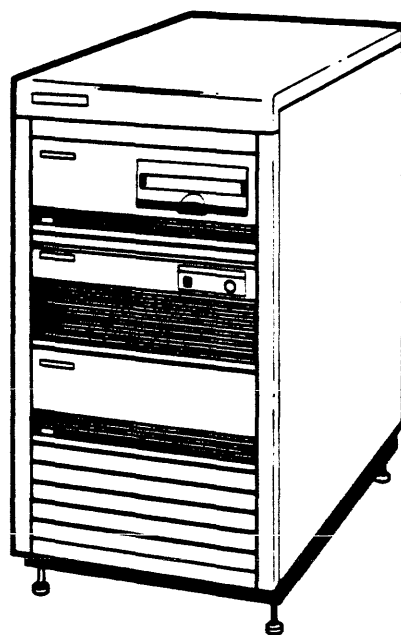
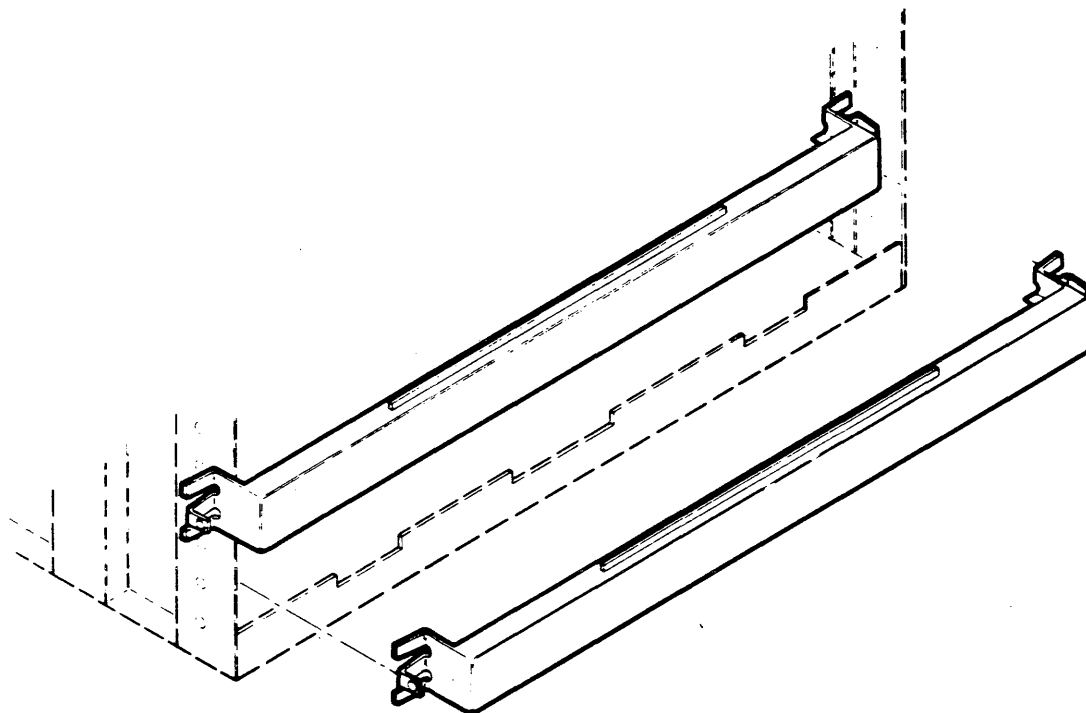
- Slide the tape unit into the frame so that the module lock touches the frame.



- Slide each clip into the lock as shown.

Verify that the module locks are properly installed by trying to slide the tape unit in or out of the cabinet.

7. If you did not place a disc on the bottom rails in Step 4, insert the filler panels, working from top to bottom, leaving the bottom space open.



Installation

8. Unpack the terminal that is to be used as the system console. The carton will contain the following:

- Terminal and Keyboard
- Manual(s)
- Power Cord
- RS-232 Cable

Place the console in its planned location. Turn the power OFF.

NOTE

Items 9 through 11 apply to optional equipment. If you do not have a modem, printer, plotter, or additional terminals, proceed to Item 12.

9. Unpack the printer. The carton will contain the following:

- Printer
- Manual(s)
- Power Cord
- RS-232 Cable

Place the printer in its planned location. Turn the power OFF.

10. Unpack the plotter. The carton will contain the following:

- Plotter
- Manual(s)
- Power Cord
- RS-232 Cable

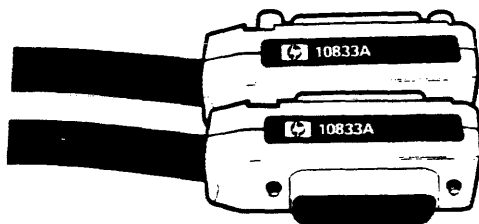
Place the plotter in its planned location. Turn the power OFF.

11. Unpack the remaining terminals. Each carton will contain the following:

- Terminal
- Manual(s)
- Power Cord
- RS-232 Cable

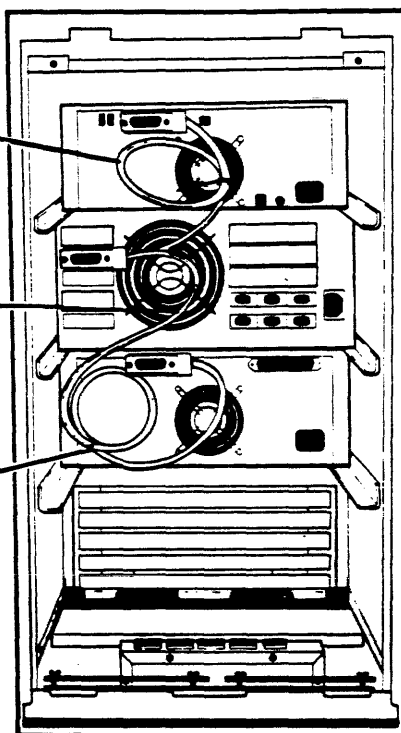
Place the terminals in their planned locations. Turn the power OFF on each terminal.

12. Install the HP-IB cables:



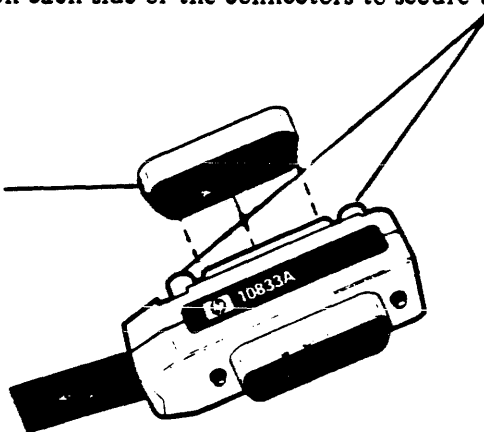
Connect the two HP-IB cables onto the SPU in "piggyback" style.

- from the tape drive to the SPU
- from the disc drive to the SPU
- use tie wraps to coil the cables



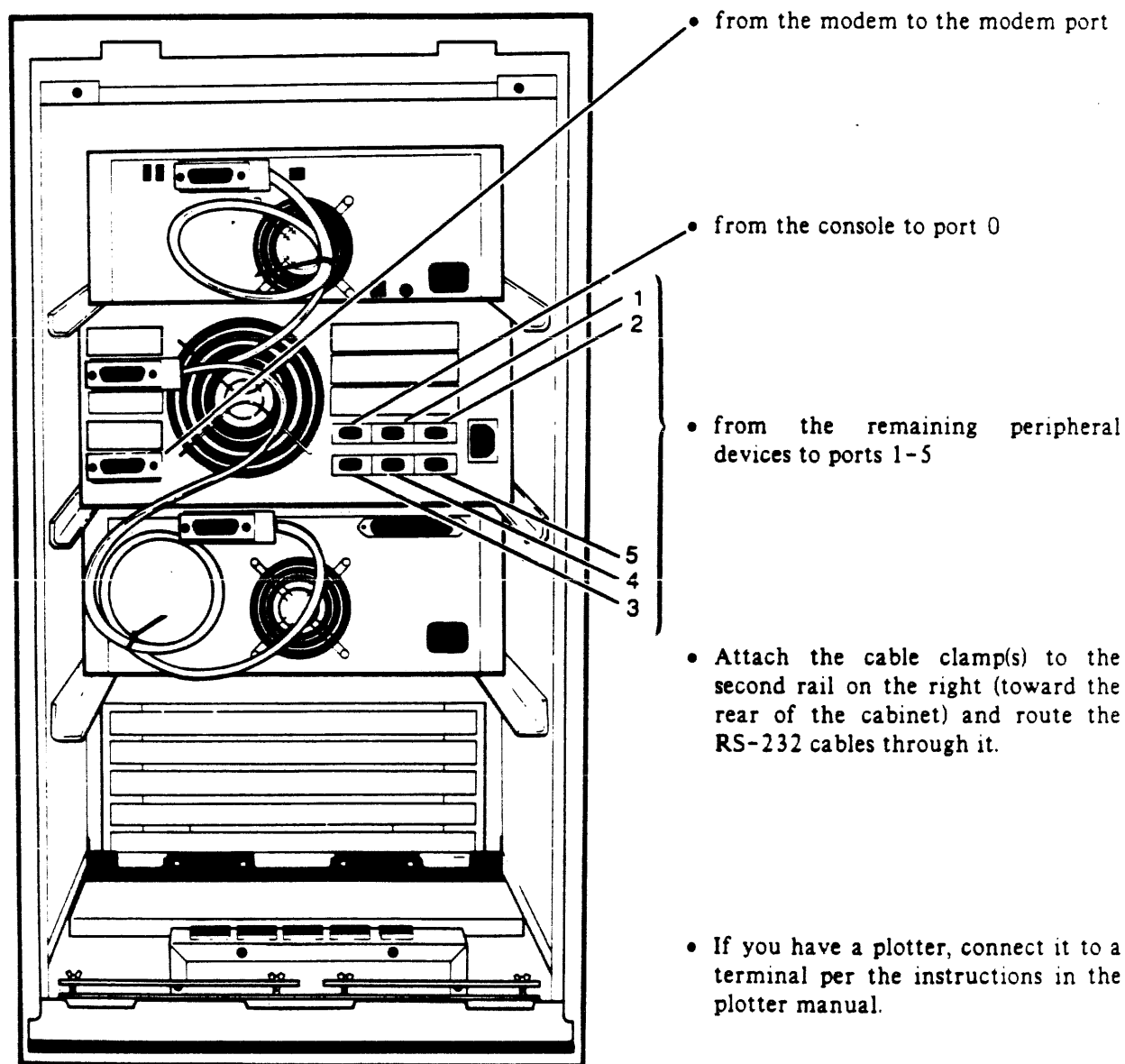
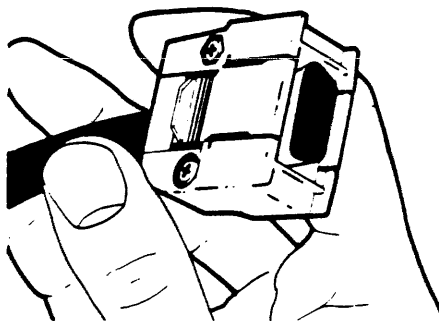
Tighten the screws on each side of the connectors to secure them.

Place dust covers over the HP-IB connectors.



Installation

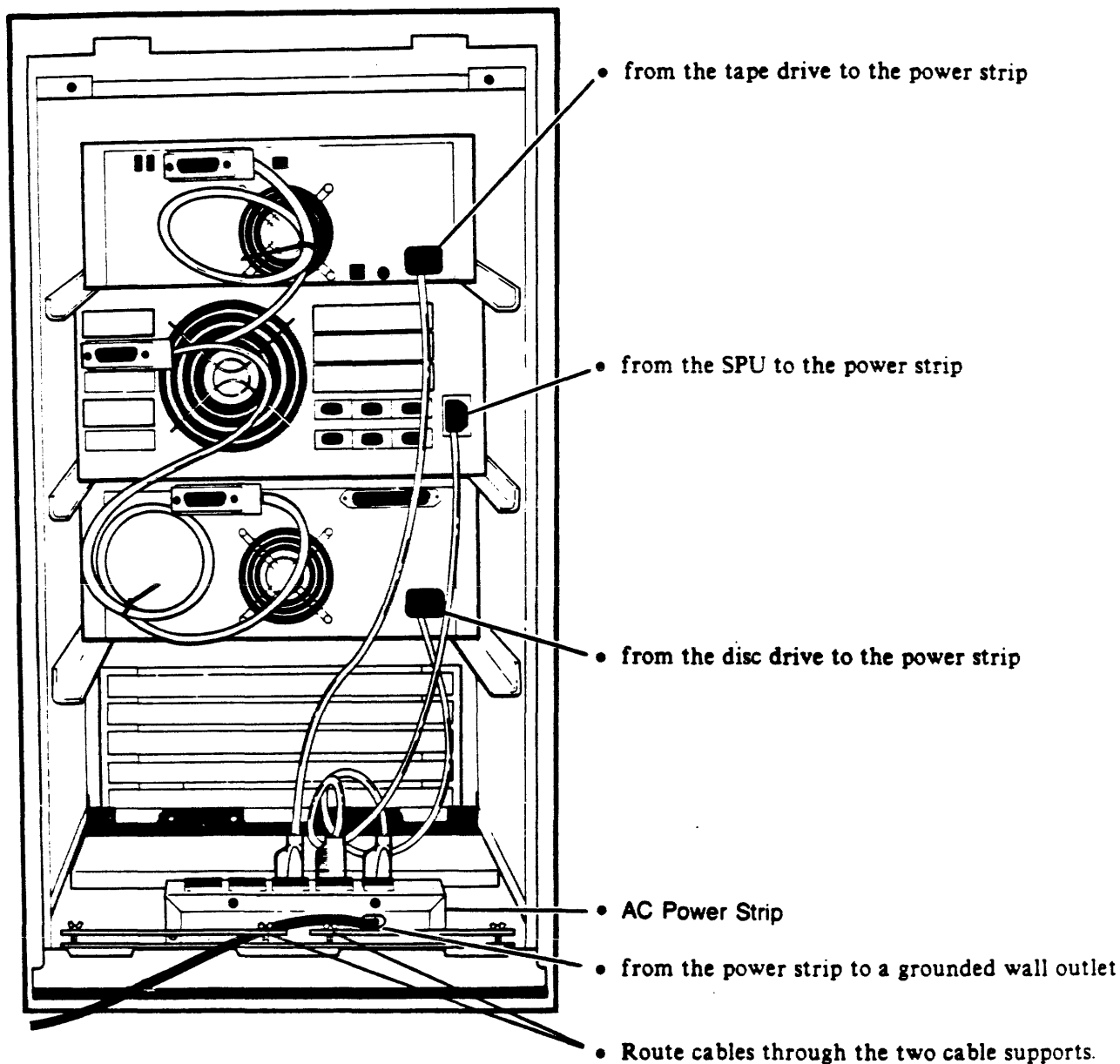
13. Install the RS-232 cables:



14. Verify that all power switches are OFF. Install the AC power cords (use the power cords that fit the power strip):

NOTE

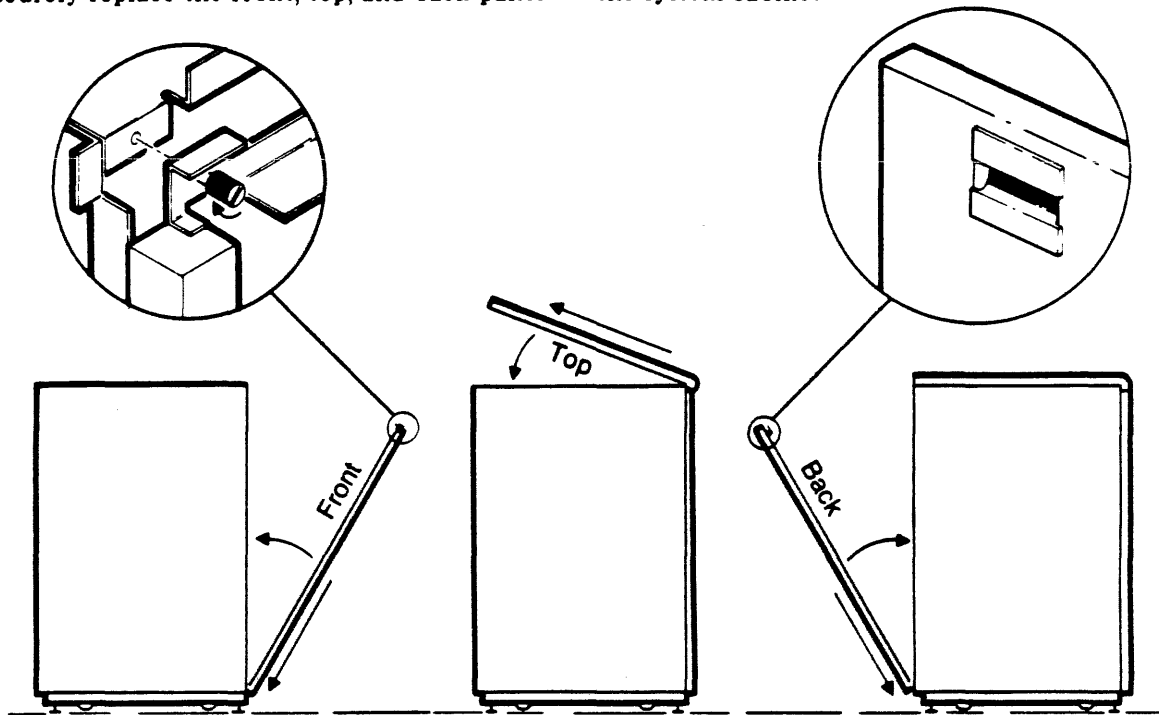
Do NOT plug any external power cords into the AC power strip.



Use tie wraps to neatly coil the power cables.

REVIEW STEPS 12 THROUGH 14 TO VERIFY THAT ALL CONNECTIONS HAVE BEEN MADE AND THAT ALL CONNECTORS ARE SECURE.

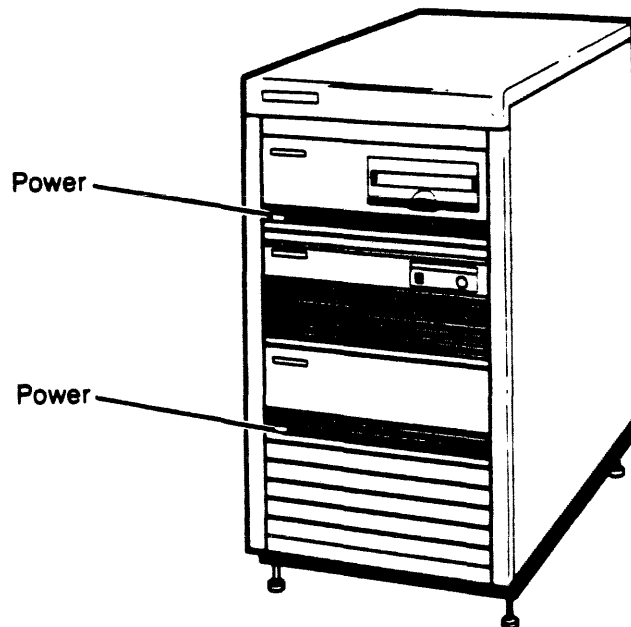
15. Securely replace the front, top, and back panels of the system cabinet.



16. Plug the AC power cords from all peripheral devices into grounded wall outlets.
17. Turn on the disc drive and tape unit. Each unit will perform a self-test. The disc drive indicators will light (refer to the appropriate manual).

CAUTION

Do NOT move the system cabinet while the disc drive is turned on. Disc damage may result.



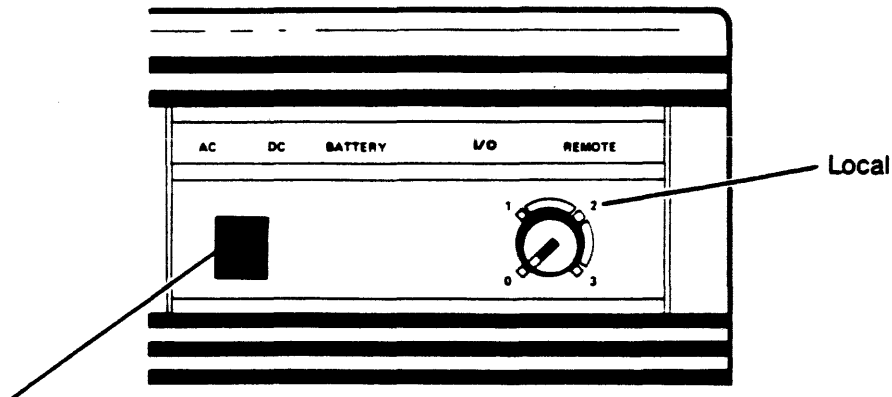
18. Prepare the peripheral devices in the following order:

NOTE

Do NOT turn on the SPU until Step 20. 19

- Using the appropriate terminal manual as a guide, connect the keyboard to the back of the console. Configure the console, setting the baud rate to 9600 (preferred), the parity to 0, the data bits to 7, and the stop bits to 1. ENQ/ACK must be enabled (YES).
- Using the printer manual as a guide, install the paper and ribbon in the printer. Configure.
- Using the plotter manual as a guide, install the paper and pens in the plotter. Configure.
- Using the appropriate terminal manual(s), install and configure any remaining terminal(s).
- Turn on each peripheral device. Each device will perform a self-test.

19. Use the key to turn the SPU keyswitch to LOCAL (2).



The self-test display will flash a 5, 1, 5, B, C, and A during the self-test process. When self-test passes, the final display will be blank. The console will display:

```
P
Power on Self Test
Memory Test passed
Number of banks = n
Slot 1 channel 1 - Terminal Interface Controller
optional (TIC or memory will be Slot 3 Channel 3)
Slot 4 Channel 4 - Peripheral Interface Channel
```

```
2 - LOCAL (from Normal)
H for Help ->
```

```
Type TEST(TE)
```

```
2-LOCAL (from Normal)
Test ->
```

```
Type IOMAP(I)
```

System I/O Configuration

```
-----
Number of bank = n
Load:          Channel 4 Device 3
Start/Dump:    Channel 4 Device 1
-----
Slot 1 Channel 1 ID = 4 - Terminal Interface Controller
-----
Slot 3 Channel 3 ID = n
-----
Slot 4 Channel 4 ID = 2 - Peripheral Interface Channel
Device 1 ID = xxxx - 7945 Disc Drive
Device 3 ID = 0260 - 9144 Cartridge Tape Unit
-----
2-LOCAL (from Normal)
Test -> EXIT (E)
```

If you do NOT see this configuration on your console, check to see that you have properly configured the computer devices.

3.2 TROUBLESHOOTING

If you have any problems, there are a few simple checks that you can do without calling your CE. Refer to Table 3-1.

Table 3-1. PROBLEMS/SOLUTIONS

PROBLEM	SOLUTION
1. SPU self-test display does not display an A (may be in a repetitive sequence) - console may indicate the error, followed by the H for HELP > prompt.	Check the tape and disc: cable connections address switches power-on indicators
2. No console display.	Check that: the console has power (plug,switch) the console cable is connected the console is in remote mode the console is configured properly the brightness control (if present) is adjusted

SYSTEM INFORMATION CARD

Configuration Information

Terminal Interface Channels

Self Test Status Indicator

NOTE: Other displayed codes indicate a failure. Check that components are plugged in and turned on; cables are properly connected; key turned to position 1. To restart self test, turn key to 0 then back to position 1. Further indication of failure requires service by an HP customer service representative.

Processor Status Indicators

Indicator	On	Off
AC	~ Present	~ Absent
DC	System On	System Off
BATTERY	Memory Backup for Powerfail (15 min)	Not in use
I/O	Processor Active	Processor Idle
REMOTE	Remote Console Enabled	Remote Console Disabled

Keyswitch Positions

0	System Off
1	Normal Operating Mode
2	Local Maintenance Mode
3	Enables Remote Console Capability

For further information, please refer to your system documentation

For Customer Service, call:

_____ (____) _____
 Name _____ Number _____

Notes:

Configuration Information

Data Communication Lines

Peripheral Interface Channel	Slot
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8
8	9
9	10
10	11
11	12
12	13
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165	166
166	167
167	168
168	169
169	170
170	171

Peripheral Interface Channel	Slot
------------------------------	------

Peripheral Interface Channel	Slot
------------------------------	------

Terminal Interface Channels

Standard			Add-On		
DRT	Slot		DRT	Slot	
Port	Device	LDEV	Port	Device	LDEV
0			0		
1			1		
2			2		
3			3		
4			4		
5			5		
7			7		

3-18

ELECTRICAL SPECIFICATIONS

APPENDIX

A

INTRODUCTION

This appendix contains the information that your electrician needs to verify that your office meets the electrical requirements of your HP 3000 Series 37. If you meet the requirements outlined in Section 2, you do not need to have an electrician use this appendix.

POWER SPECIFICATIONS

The power specifications for the HP 3000 Series 37 are:

Line Voltage

The Series 37 requires a single phase power system with nominal voltage of:

100 - 120 VAC	+/-10% (90 - 132 VAC) or
200 - 240 VAC	+/-10% (180 - 264 VAC)

Power voltages outside the specified operating range can cause intermittent system errors or shutdown. Low voltage is the most common power problem, and is usually caused by inadequate wiring.

Line Frequency

The required line frequency is 48 Hz to 63 Hz. Line frequency usually depends on the local electric company. Power is rarely generated by a motor inside your building. Incorrect line frequency can cause intermittent system errors or display jitter.

Safety Ground

Safety ground is required as protection for operating personnel and equipment. Every wall outlet used by the system must have a safety ground.

The green-wire ground is connected to the metal frame of each system device to protect an operator against equipment malfunction, and to make the equipment resistant to a catastrophic event such as a lightning strike. Be sure that the green-wire ground is connected from the wall outlet to the distribution sub-panel where the circuit breaker is installed.

Figure A-1 illustrates the three-conductor grounded power cords that are offered with the HP 3000.

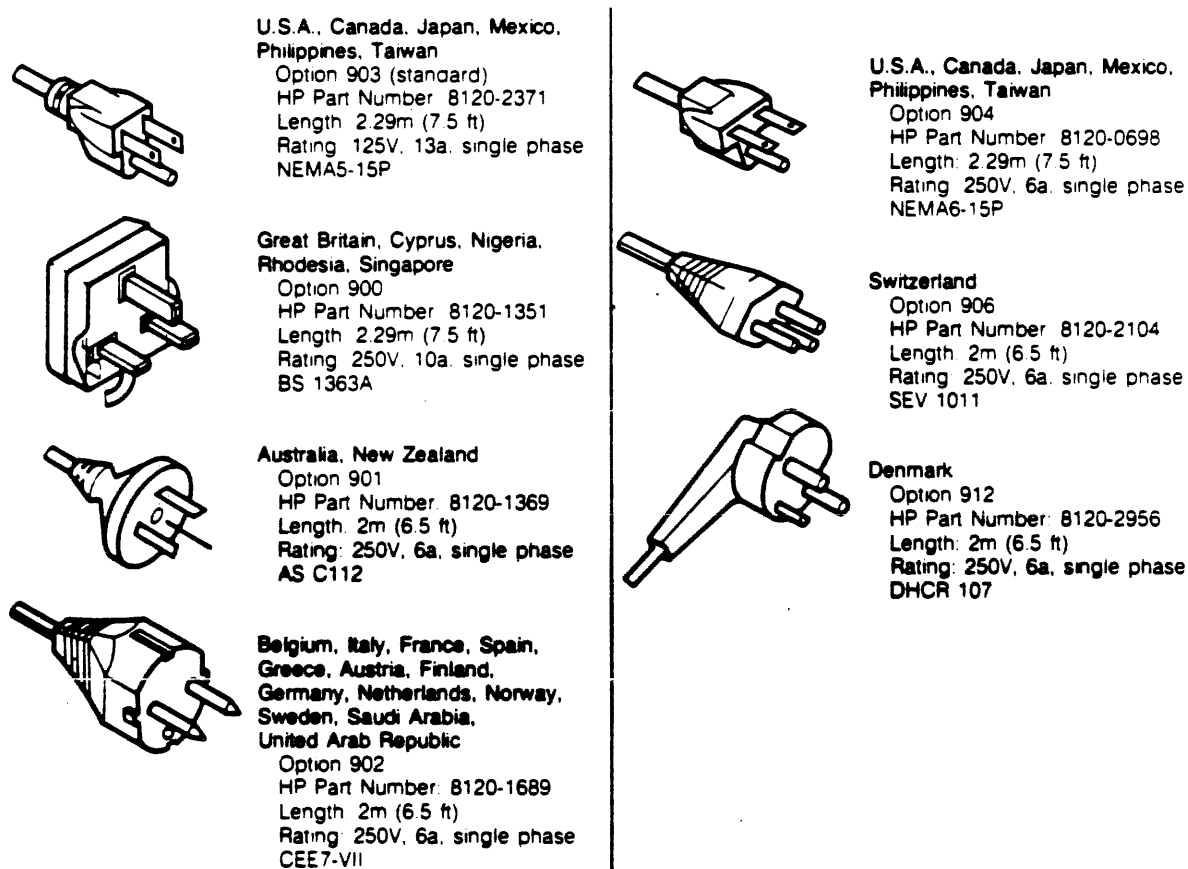


Figure A-1. Power Cords (U.S. and International)

APPROVALS

The HP 3000 Series 37 computer system has the following regulatory approvals:

Safety:

- o UL 114, Office Machines
- o UL 478, Data Processing Equipment
- o CSA C22.2 No. 154, Data Processing Equipment

RFI:

- o HP 3000 Series 37, FTZ License No. pending
- o FCC Level A Compliant
- o West German FTZ License No. pending

Data Communications:

- o Germany, United Kingdom, Australia, France, Belgium,

Current

The cabinet AC power strip is rated at 15 amperes (U.S. and Canada). Table A-1 shows the amount of current drawn by each device.

Table A-1. TYPICAL CURRENT DRAWN BY EACH DEVICE

Device	(Circle) Amperage Drawn at:				(Multiply by) Number of Machines	(Equals) Total Amperage Drawn
	100V	120V	220V	240V		
HP 150	1.1	1.0	0.6	0.5		
HP 2392	0.5	0.4	0.2	0.2		
HP 2601/2	1.0	0.9	0.5	0.5		
HP 2623	1.2	1.0	0.6	0.5		
HP 2624/5	1.0	0.8	0.5	0.4		
HP 2628	1.0	0.8	0.5	0.4		
HP 2932	3.0	2.5	1.4	1.3		
HP 2933/4	3.0	2.5	1.4	1.3		
HP 7475	0.4	0.3	0.2	0.1		
HP 7945	1.4	1.2	0.7	0.7		
HP 9144	0.8	0.7	0.4	0.3		
HP 32449A	2.2	2.0	1.7	1.1		
HP 35141A	0.1	.01	.05	.05		
					TOTAL:	TOTAL:

Separate Circuit Breakers

Available current cannot exceed 80% of the circuit breaker rating (eg. 12 amperes for a 15-ampere circuit breaker).

If expansion beyond a minimum system is planned (adding a larger disc unit, tape unit, or HP-IB printers), a separate circuit breaker for the system is suggested, but not required. Separate circuit breakers ensure sufficient power to avoid data errors and to isolate the system from any faulty equipment. Typical circuit breakers in the U.S. are rated at 15 or 20 amperes. The ampere load in each circuit should allow a margin for startup and surge currents caused by the system.

Power Line Transients

Heavy electrical loads from nearby machinery or equipment, like elevators or electric welders, can cause intermittent system errors even if that equipment is on a different circuit breaker. For those conditions, you must provide a separate, completely independent circuit with isolated ground and a circuit breaker coming directly from the main building power source. In cases of severe electrical noise, it may be necessary to install an isolation or power line conditioning transformer.

Where multiple circuits are needed to provide the required total amperage protection, consult local electrical codes to determine the appropriate circuit breaker sizes and load distribution (maximum breaker for common receptacles in the United States is 20 Amperes; in Canada, 15 Amperes).

DIRECT CONNECTIONS

The Advanced Terminal Processor for the Series 37 (ATP37) (HP Product 30460A), is capable of communicating with supported workstations, printers, and plotters via an RS-232-C data link, using a direct hardwired connection. The EIA RS-232-C standard defines the mechanical/electrical characteristics for devices which can connect to the ATP37 interface. See Figure A-2. Supported options are reported in the Configuration Guide that is available from your Sales Representative.

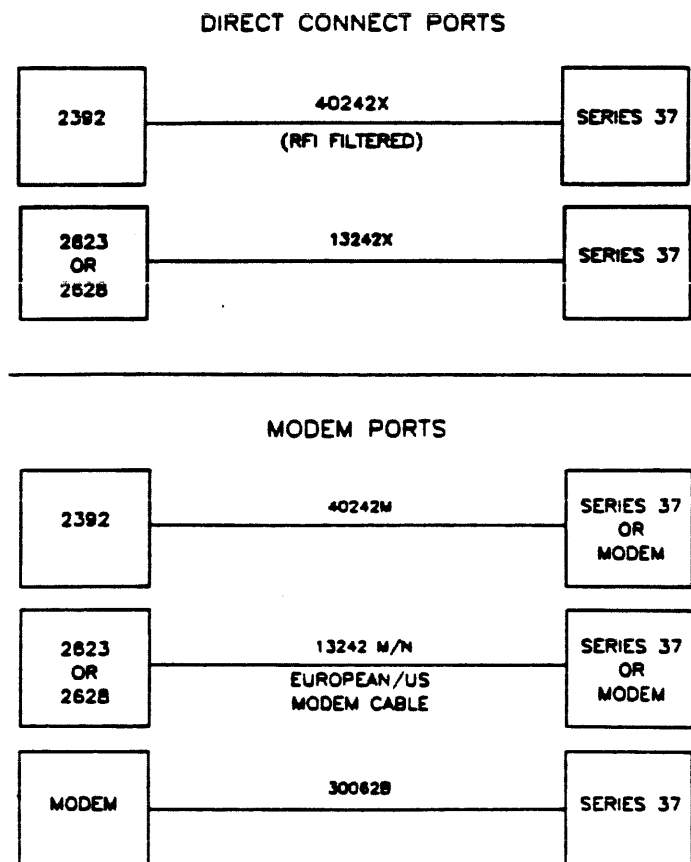


Figure A-2. Direct Connections

READER COMMENT SHEET

CUSTOMER INSTALLATION MANUAL (P/N 30457-90001)

Model Number:

Serial Number:

We welcome your evaluation of this manual. It is one of several that serve as a reference source for HP 3000 Series 37 Computer Systems. Your comments and suggestions help us improve our publications and will be reviewed by appropriate technical personnel. HP may make use of the submitted suggestions and comments without obligation. **Please comment on any NO response.**

Did the shipment arrive undamaged? Yes ☐ No ☐

Was the shipment complete? Yes ☐ No ☐

Was the physical appearance OK? Yes ☐ No ☐

Was the mechanical condition OK? Yes ☐ No ☐

Was the system easy to install? Yes ☐ No ☐

Does the hardware operate properly? Yes ☐ No ☐

Does the software operate properly? Yes ☐ No ☐

Is this manual technically accurate? Yes ☐ No ☐

Are the concepts and wording easy to understand? Yes ☐ No ☐

Is the format of this manual convenient in size, arrangement and readability? Yes ☐ No ☐

ARE YOU SATISFIED WITH YOUR NEW SYSTEM? Yes ☐ No ☐

COMMENTS:

I would like the factory to call:

We appreciate your comments and suggestions. This form requires no postage stamp if mailed in the U.S. For locations outside the U.S., your local HP representative will ensure that your comments are forwarded.

Date: _____

FROM:

Name _____

Company _____

Address _____

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FOLD



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